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ABSTRACT

This paper presents a comprehensive, curriculum-based assessment (CBA) system for preschool education programs. Central to this system, entitled Continuous Assessment and Monitoring of Preschool Progress (CAMPP), is a series of short duration probes of critical preschool skills. These probes are designed to be used in a frequent and repeated fashion to plan instructional strategies and to monitor student progress during an instructional program. The skills assessed by this model are based on functional preschool survival skills, rather than developmental milestones that frequently lack instructional relevance. Results of three single-case studies demonstrated the feasibility and utility of using short-duration probes for initial assessment, to facilitate preparation for transition, and to assess student progress frequently within a functional preschool curriculum. (MDM)

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Continuous Assessment and Monitoring of Preschool Progress

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Abstract

A comprehensive curriculum-based assessment system for preschool students is presented. Central to this system is a series of short duration probes of critical preschool skills. These probes are designed to be used in a frequent and repeated fashion to plan instructional strategies and to monitor student progress during an instructional program. The skills assessed by this model are based on functional preschool survival skills, rather than developmental milestones that frequently lack instructional relevance. Results of single case studies that use continuous, curriculum-based assessments have shown positive outcomes on target skills and enhanced instructional decisions. Directions for data derived from this system in planning for transition to less restrictive settings are discussed.

Introduction

Curriculum-based assessment (CBA) and curriculum-based measurement (CBM) have been submitted as viable and effective alternatives or adjuncts to traditional norm-referenced assessment practices (Gickling & Havertape, 1981; Shapiro, 1987; Shinn, 1987; Shinn Rosenfield & Knutson, 1989). In addition to providing an accurate assessment of student functioning on critical academic tasks, the CBA/CBM approach offers a strategy for improved educational decision making. Variables such as the pace of instruction and the planning and evaluation of educational interventions can be monitored. In a review of different CBA/CBM models, Frisby (1987) identified common principles of the approach, including direct assessment in classroom instructional material, short-duration testing, frequent and repeated measurement, and monitoring of student progress through graphed data. This approach is also characterized by an assessment of the student in a natural (i.e., classroom) environment.

While the CBA/CBM approach has been extensively documented for use in school-age situations, there has not been a similar systematic attempt to apply the CBA/CBM approach and procedures to preschool students. Existing systems that have attempted to use a curriculum-based approach for preschoolers (e.g., Bagnato, 1981: Bagnato & Neisworth,

1988) have focused on linking results of existing assessment instruments or developmental schedules to preschool curricula. It has been suggested that a naturally occurring developmental sequence of skills, such as those found in traditional assessment instruments, may not necessarily be appropriate instructional targets, especially for students with disabilities (Bailey & Wolery, 1984). For example, a skill such as reproducing various block constructions, frequently included on developmental schedules, may discriminate students at different developmental levels. They may not, however, be judged by preschool teachers as important in an instructional sequence.

In addition, no system has been developed to measure preschool skills continuously during an instructional program. When developmental schedules are used, measurement of students' skills typically occurs only a few times during an instructional year. A salient aspect of the CBA/CBM approach is that measurement occurs on a frequent, ongoing basis, and serves as a formative guide to instructional planning. For example, Fuchs and Fuchs (1986) found that assessment on a twice-a-week basis produced optimal achievement.

The comprehensive assessment methodology to be described in this paper, entitled Continuous Assessment and Monitoring of Preschool Progress (CAMPP), is intended to incorporate all of the fundamental

aspects of curriculum-based assessment within a preschool arena.[1] Most prominent in this approach is the feature of short-duration probes allowing for frequent and repeated measurement of progress on critical preschool skills. In addition, the program is based on a reconceptualization of the standard preschool curriculum. Instead of being developmental in nature, the curriculum is based on functional skills that are critical for survival and success in least restrictive educational settings, such as those suggested by McCormick and Kawate (1982), and Vincent, Salisbury, Walter, Brown, Gruenewald, and Powers (1980).

Assessment of classroom survival skills through the CAMPP system differs from traditional evaluation, which relies on standardized measures to find intellectual and adaptive behavior levels, in several important dimensions. First, the classroom behaviors assessed are those that are directly taught in the classroom. Second, the performance of the student is compared to classroom criteria rather than to normative samples. Third, the focus of assessment is on linkages with instruction, instead of the determination of eligibility for special programming. The identification and monitoring of patterns of behavior over time occur in the instructional environment, during instruction, and lead directly to improved instructional planning by the classroom teacher.

[1] Throughout the paper, the term "preschool" refers to educational programming for students from ages three to six, and includes preschool, nursery schools, kindergartens, etc.

Selection of Instructional Targets

The determination of which instructional criteria are appropriate assessment targets is based on an analysis of the least restrictive educational environment that the student may be expected to enter. In most cases, a regular nursery or preschool program or a regular kindergarten serves as a useful referent. This analysis may be conducted in an ideographic manner for the particular classroom that the student would be expected to attend. In this individual approach, "template matching" techniques as described by Bem (1982), Bem and Funder (1978), Bem and Lord (1979), Carden-Smith and Fowler (1983), Cone, Bourland and Wood-Shuman (1986), and Hoier, McConnell and Pallay (1987) would be used. While a unique analysis of each targeted instructional setting is preferred, the CAMPP system has incorporated assessment procedures for those features that have been most commonly identified as occurring in effective preschool programs. The following functional domains are proposed as critical in most preschool settings.

Cognitive and social play

The importance of cognitive and social play to later development has been extensively documented (Christie & Johnson, 1983; McHale & Olley, 1982; Odom, Jenkins, Speltz, & Deklyen, 1982). Saltz and Johnsen (1977) have shown that interventions can be designed to enhance the social and

cognitive play of preschoolers. In the CAMPP system, cognitive and social play is assessed through a procedure that is based on direct observation in the natural environment, according to guidelines developed by Johnson, Christie, and Yawkey (1987).

Functional language

Language difficulties are a predominant indicator of later learning disabilities/difficulties (Bryen & Gallegher, 1983; deHirsch, 1981). In CAMPP, functional language is assessed through both direct assessment probes and natural observation strategies. The following represents some of the skills sampled: responding when name is called, responding to questions, length of verbalization, using language to achieve needs, verbal participation in classroom activities, and following directions.

Classroom orientation skills

Critical to later success in school is the ability of the young student to fit into various classroom structures (Innocenti & Rule, 1985). These structures may require sustaining attention, class participation, imitation, complying with rules, and following classroom routines. These skills are assessed through direct observations of the student in the classroom environment.

Self-help/adaptive skills

The learning of self-help skills in the preschool years has been shown to increase independence and decrease differences between non-handicapped students and those with disabilities (Snell, 1980). The CAMPP approach uses systematic observation of prerequisite skills that are derived from a task analysis of several critical self-help adaptive skills, including dressing, toileting, eating, hygiene, etc.

Pre-academic skills

Preschool programs have traditionally included instruction on pre-academic skills. In the CAMPP system, skills selected are those that are precursors to school success, rather than primary-level academic skills. These precursors include matching/association tasks, pre-writing skills, pre-reading skills, pre-math skills, and conceptual skills.

Applications of CAMPP

The CAMPP Program is designed to be used in any preschool program in which precise measurement of student skills is emphasized. It has particular relevance to preschool programs for students with mental and physical handicaps, and for students making the transition from pre-kindergarten to kindergarten. The CAMPP procedures conform to a multi-disciplinary approach to student assessment and intervention. They can be

used for data-based decision making throughout the course of the student's involvement with the preschool program. Specialists from various disciplines (e.g., school psychologists, teachers, speech and language clinicians, etc.) can use the system at all stages of assessment and program development. The following descriptions trace the use of CAMPP through these stages.

Initial Assessment

The student evaluation process in the preschool years often begins with a referral from a parent, or from a teacher of a student in a regular nursery school, day care center, or Head Start program. In the CAMPP system, background information is secured and developmental information is checked via parent and teacher interview. The purpose of this initial survey is to develop operational definitions of critical behaviors and to select specific observational probes for a more in-depth assessment. Assessment procedures are identified from the existing probe inventory or additional instruments are developed. These procedures are employed to assess the student in the natural setting until a stable baseline of behavior is established.

While general measures (e.g., Battelle Developmental Inventory, Bayley Scales of Infant Development, McCarthy Scales, Stanford-Binet Intelligence Scale, etc.) are frequently administered at the time of

referral, their purpose is to provide an estimate of general development, not to generate specific programmatic recommendations. Frequently, the results of a general developmental measure may suggest additional probes to forge a direct link with program development. Bagnato and Neisworth (1988) have argued that such a linkage is possible with summative measures. In the CAMPP system, such linkages would be postponed until a more precise measurement could be taken. The focus would be on skills that are more appropriate instructional targets than can be gleaned from developmental measures.

For example, a summative developmental test, or even a battery of tests, may suggest that a student has a weakness in receptive language. Most findings of this nature give little help or direction to the preschool instructor. In the CAMPP system, a deficit in receptive language would lead the assessment team toward further probes of specific skills such as responding to verbal direction individually and in group, or responding appropriately to specific "wh" question forms.

Eligibility Decisions

In the traditional approach to determining eligibility for special education, analysis of results of norm-referenced measures induces the assessment team to make a judgment on eligibility from a standardized sample of a student's behavior generated over a very short time. Analysis

of frequent measurement, on the other hand, allows the team to consider a student's performance on curriculum-based tasks over time, providing a larger sample of behavior. During this longitudinal review, interventions that are precisely targeted to the student's instructional needs can be carefully examined. Students who make acceptable progress, given appropriate and effective instruction, may be considered as not eligible for special services. Students who fail to make adequate progress in spite of intensive interventions may be deemed eligible for special services. The approach conforms to Galagan's (1985) argument that CBA is closer to the intent and spirit of Public Law 94-142 than standardized testing.

This empirical approach to the determination of eligibility is especially appropriate for preschool students for three reasons. First, early childhood professionals have expressed concern over assessments that arbitrarily attempt to establish developmental levels in the face of students whose developmental patterns defy prediction (Guess, Sailor, & Baer, 1977). The CAMPP approach minimizes this problem as its longitudinal structure allows for refinements of estimate over time.

Second, preschool students are frequently difficult to assess (Ulrey & Rogers, 1982). Every early childhood assessment specialist knows the maxim of "on a given day." Attempting to assess a student in a one-shot,

clinical setting has long been seen as far from best practice. The CAMPP approach again minimizes this issue by analyzing brief and frequent assessments, over a longer period, to decide eligibility.

Finally, a historical concern about the enterprise of preschool assessment has been the issue of early labeling of a handicapping condition (Keogh, 1973). The negative effects of labeling on teacher behavior and student performance have been amply demonstrated (Fogel & Nelson, 1983; Madle, Neisworth & Kurtz, 1980). The labels available under current special education laws and regulations appear to be benign. However, practitioners and parents are correctly concerned about the potentially biasing effects of apparently innocuous terms such as "Developmentally Delayed." The CAMPP system again addresses this problem in a more careful manner by longitudinally assessing the student, and by making the student's response to intervention the basis for eligibility determination.

Program Development

If a student is determined to be eligible for early intervention services, the baseline data derived from CAMPP probes are used to design an Individualized Educational Plan (IEP). This plan features instructional targets that are functional and measurable. These goals, if achieved, are likely to improve a student's probability for success in a regular setting

(i.e., a nursery school or kindergarten). In this manner, the IEP becomes a valuable, measurable, and functional document that guides instruction.

For example, rather than generic goals that are typically derived from standardized tests, such as "the student will improve language comprehension," CAMPP goals are more precise and operationally defined. Goals such as "the student will increase the number of words used in an utterance," "the student will give accurate topic-relevant responses to teacher or peer questions," or "the student will follow two-step familiar directions" are operationally defined behaviors that can be measured accurately, naturally, and on a frequent basis in the classroom. These formative goals help the teacher to determine if instruction is effective.

Progress Monitoring

As students receive specialized instruction in a preschool program, their progress on functional skills is assessed via short-duration, observation-based or individually administered probes on a frequent and ongoing basis. Assessment data may be collected by the classroom teacher, teacher assistant, speech therapist, preschool psychologist or parent, after sufficient training and reliability checks have been conducted. Data are graphed to aid in the analysis of the student's progress and in instructional decision-making. In this way, assessment becomes a dynamic and formative process occurring within the natural

educational environment of the student. Data are used to monitor the effectiveness of instructional and behavioral interventions. Graphs are designed to be reviewed daily by the instructor, and at least biweekly by the instructional team. Periodically during the school year, a transdisciplinary team, acting as an additional instructional support team, reviews the data to evaluate overall progress.

To establish criteria for target goals, future regular education settings become the focus of assessment. Students are considered to have mastered a classroom survival skill when the accuracy, rate, duration or intensity of skills and behavior matches the levels of successful students in the regular education program. Students may then be integrated into the regular setting at a level appropriate to their instructional needs (e.g., nursery school or kindergarten).

In an instructional program based on CAMPP, teachers use multiple, short-duration probes designed to monitor continuously those behaviors that Walter and Vincent (1982) have characterized as "survival skills." These authors have defined these skills as "behaviors that will result in referral to and maintenance in least restrictive environments when the student is ready for kindergarten or first grade" (p.9). As students progress through an instructional sequence, longitudinal graphing of assessment data is used to monitor student progress. Analysis of the

graphed data is intended to help formative instructional decision making, and the evaluation of instructional effectiveness.

Transition Planning

The assessment process, for the purposes of transition planning, should include descriptions of the educational setting that is being considered for the student. Through this process, skills that the student will need for success in that environment can be identified. McCormick and Kawate (1982) used a checklist (Kindergarten Survival Skills Checklist) to identify required classroom skills. Salisbury & Vincent (1990) have stressed that "the content of the inventory should be validated by observation in those settings and its items operationalized for assessment and planning purposes" (p. 81).

An emerging strategy to address the issues of assessment of future setting demands, development of instructional targets, and improved special education decision making is that of developing a "profile" or "template" that will show the extent to which the skills and behavior of a target student compare to the skills and behavior of successful learners in the regular classroom.

In the CAMPP approach, behavioral observation data are used to construct a graphic profile of the environmental/behavioral demands of a future setting that can be compared to the performance of a target

student being considered for that class. The profiles can be compared to determine appropriate instructional objectives, and decisions can be made regarding the likelihood of a student succeeding in the next environment.

The specific method used to assess the demands and expectation of the future setting would involve a three step process. First, the teacher in the regular classroom is asked to identify or "index" a student who represents a comparison group of students of interest, based on his/her educational/social competence within the classroom. For example, an average student or perhaps even a student who requires some extra assistance, but who is still considered by the teacher as appropriate for the classroom, could be indexed.

In the second step, a behavioral profile for the comparison student is developed. The profile is based on an observational assessment of critical educational and social skills, employing the same assessment methodology used to monitor the progress of the student in the special education program (i.e., through CAMPP).

Third, this behavioral profile is compared to a similarly developed profile of the target student being considered for the class. The profile of the comparison student is then used to identify levels of student behavior, teacher-student interaction, and other educational and social variables of the mainstream classroom. The profile is useful in identifying the skills

that the target student will need in order to succeed in this setting. The behavioral profile displays relevant data in areas such as the student's time-on-task, group attention, participation, social play, functional communication, frequency of teacher attention, frequency of reinforcement, and amount of time spent in different instructional arrangements.

Template matching, using the CAMPP assessment methodology, offers a means of developing an Individualized Educational Program (IEP). It could be particularly important at the preschool level, where students are moving to new and significantly different environments, from situations where students receive frequent one-to-one interactions to situations where they must function in whole group interactions in a large classroom. When template matching is part of a preschool special education program where students' functional survival skills are included in the IEP and assessed frequently, teachers are provided with relevant targets for instruction as well as useful data for decision making when it is time for the student to enter kindergarten.

Case Studies

In order to describe the CAMPP process as typically used, three case studies are provided. These studies were conducted on students in a mixed

rural and urban area of central Pennsylvania.

Sample Study 1: Initial Assessment

A five year old boy was referred for assessment by his kindergarten teacher because he failed to attend consistently to instruction. He required frequent teacher prompts and verbal directions to remain on task. When directions were given to the class, he frequently failed to respond. His ability to attend and follow instructions reportedly improved when he was seated away from the group, at an individual desk, rather than at the work table. Once he started a task, his behavior was usually appropriate for the situation.

A comprehensive assessment was conducted, employing interviews and observation-based methods using selected CAMPP Probes. Six structured observations were conducted in the classroom during group activities, individual seat-work and free-play. Attention to group activities and seat-work/time-on-task were measured using the CAMPP Attention probe, a 20 second interval time sampling technique. Appropriate attention to group activities was defined as the student in seat with body oriented and eye gaze directed toward the particular focus of instruction. Specific non-attentive behaviors were coded during observation.

A sample of five students were nominated, by the teacher, as being

representative of "Average" students in the classroom. Data were collected on these students employing the same measures used for the target student. A behavioral profile was developed, based on the average on-task behavior of these students, to use for comparative purposes.

As indicated in Figure 1, the target student exhibited appropriate attention to both group and individual table activities, at an average of 64% of observation intervals over the six observation sessions. The range of his attention to task was beween 55% and 75%; however, the majority of data points (4 out of 5) were between 60% and 65%. Thus, his attending behavior was relatively stable.

Insert Figure 1 about here.

A comparison group average was determined from the data collected on the five teacher-nominated students in the classroom. The group average for appropriate attention was found to be 72% and ranged between 40% and 100%. The target student's attending behavior was below the group mean by approximately 7%.

The observation-based assessment suggested the target student's attention was below the group mean. His non-attending behaviors were most often coded as visual scanning of the environment. His eye gaze was

often directed at a neighboring student in an apparent attempt to determine task requirements. Although his rate of attending represented a problem within this classroom, it was not a consistent problem. He was observed to actually restate a teacher direction verbatim to another student who was not attending (e.g., "She said if you have your cup by your ear, she will not pass out the milk").

A treatment plan was developed to focus on the the identified problem areas of attention to both group activities and individual seat-work tasks and appropriate participation in classroom activities. As indicated in Figure 1, as a result of three months of intervention, the student's attention improved to a level (70% to 78%) surpassing the comparison group mean for these behaviors. At the end of the school year, the student was recommended for advancement to first grade "without reservation." A follow-up contact with the student's parents and first grade teacher indicated that his academic and social progress continued to be commensurate with his classroom peers.

Sample Study 2: Progress Monitoring

A four year old boy in a program for preschoolers with mild handicaps was referred for limited social interactions. A 10-second partial interval time sampling observation (Tawney & Gast, 1984) was used to record the rate at which he engaged in interactive play with peers.

Interactive play was defined as talking with or sharing play material with another student who is in physical proximity of five feet. If interaction was noted during an interval, it was coded on the Social/Cognitive Play probe. Intervals were audio-cued to the observer by a pre-recorded observation tape and headphone. The type of social play demonstrated by the student was tallied on the probe score sheet. Total rate of interactive play was determined by calculating percentage data for each observation session.

During the baseline phase of five nonconsecutive days, the student was allowed free play with no intervention from teaching staff. In the intervention phase, the student was instructed to play with an assigned peer partner. Food reinforcement (i.e., a small cracker) was provided by the teacher assistant on a random interval schedule contingent on engagement in interactive play. Data were collected for the student on a weekly basis during the intervention phase.

Insert Figure 2 about here

The results of this study are presented in Figure 2. During the five day baseline phase the student's level of social interaction did not exceed 15% of the observation intervals. With the introduction of the

intervention phase, the level of appropriate social interaction with peers increased steadily and approached 80% of the observation intervals. The changes in slope direction from baseline to intervention phase indicates that this measure was sensitive to the effects of the intervention and assisted the instructors in choosing and monitoring a successful strategy for this critical social skill.

Sample Study 3: Transition Planning

In the final study, CAMPP data were used to plan for the transition of a student moving from preschool special education to a kindergarten classroom. The first step in this process involved data collection of critical classroom behaviors in the receiving kindergarten classroom. The receiving teacher was asked to identify a student in the classroom who represented students who may experience academic and/or behavioral difficulties, but who are still considered appropriate for the classroom. This student then became the focus of an observation-based behavioral assessment in order to appraise the demands and expectation of the future classroom.

The comparison student was assessed in the domains considered relevant to the transition process, with emphasis on those behaviors that could present obstacles to the successful transition of the student into the regular classroom. Specific domains were drawn from the target

student's educational plan. The assessment included probes of interactive social behaviors and rate of attention to instructional activities. These probes were based on the percent of observed intervals in which these behaviors occurred. Probes assessing the frequency of language use to achieve needs and appropriate response to teacher and/or peer questions were based on the frequency of occurrence of these behaviors divided by the total number of utterances. Additionally, other classroom variables were noted, including time spent in various instructional arrangements, class schedule, types of teacher instructions given, etc.

Rates of these behaviors for the comparison student were established in October of the year before transition. These data were used to construct a behavioral profile or template that graphically portrayed the levels of these behaviors exhibited by a student considered successful in the mainstream classroom. A similarly derived template was developed for the target student in the special education program. These comparison data are presented in Figure 3.

Insert Figure 3 about here

Data were used to identify target goals for preschool instruction. An analysis of the templates revealed similarities and differences

between the skills and competencies of the successful student in kindergarten and those of the student in special education. First, the target student's ability to attend appropriately to classroom instruction and tasks was congruent with that of successful students in the mainstream. However, these data also revealed discrepancies in frequency of social interaction, frequency of verbal language usage, and appropriate response to teacher and/or peer questions. These discrepant areas thus become the focus for preparatory instruction in the special education program.

Observations also revealed salient differences between teacher behavior in the special education class and teacher behavior in the kindergarten classroom. The frequency of teacher prompts to complete tasks was much higher in the special education class. In addition, the special education teacher gave directions to her students by using their names while the teacher in the kindergarten class gave group directions (e.g., "Kindergarten, it's time to clean up").

As a result of six months of preparatory instruction in the special education program, significant congruence was achieved between the target skills of the special education student and those of the successful student in the kindergarten class, as indicated in Figure 4 .

Insert Figure 4 about here

By May, the student achieved approximate congruence in areas of frequency of social interaction, attention to instruction, and appropriate verbal response to teacher and peer questions. A discrepancy continued to exist in the frequency of spontaneous language use to achieve classroom needs. With teacher support in the form of nonverbal cues, the student's rate of language use did approach that of the comparison kindergarten student.

Through this process of frequent monitoring of student progress and assessing the future setting using the same assessment method used in the special program, specific strategies were identified that were successful in improving social interaction (peer pairing), language usage (prompts and cues), and appropriate response to questions (shaping with tangible reinforcers). Generalization and fading strategies resulted in independence and mastery of skills. Strategies that could be replicated by the kindergarten teacher were developed. Important teacher behaviors were identified that, if modified, could improve the target student's probability for a successful transition to kindergarten. For example, the teacher could give individual directions using the students' names rather

than group directions, use tangible reinforcers to increase compliance, increase prompts for language use and task completion, and employ other instructional strategies found to be effective in the preschool special education class. A one year follow-up of the student indicated successful integration into the kindergarten classroom, with the teacher working to fade some of the supportive interventions to further increase the student's assimilation into this class.

Conclusions

The three single-case studies presented here demonstrated the feasibility and utility of using short-duration probes for initial assessment, to facilitate preparation for transition and to assess student progress frequently within a functional preschool curriculum. Repeated assessments allowed instructors to analyze student progress during the course of a systematic intervention. The assessments appeared to be sensitive to changes in rate for the target behaviors and allowed adjustment of intervention strategies. The feature of using frequent measurement to guide instruction is directly parallel to the benefits of CBA/CBM that have been realized on school-aged students on academic tasks.

It should again be emphasized that the CAMPP approach is individualistic regarding different students and various instructional domains. Several specific probes have been developed by the authors that address elements that appear to be critical to students' developmental progress in the preschool years. However, different users of this approach may identify unique skills that require precise measurement for individual students. Like its school-aged counterpart, CAMPP can be seen as a conceptual approach to student assessment and intervention, rather than a collection of specific procedures.

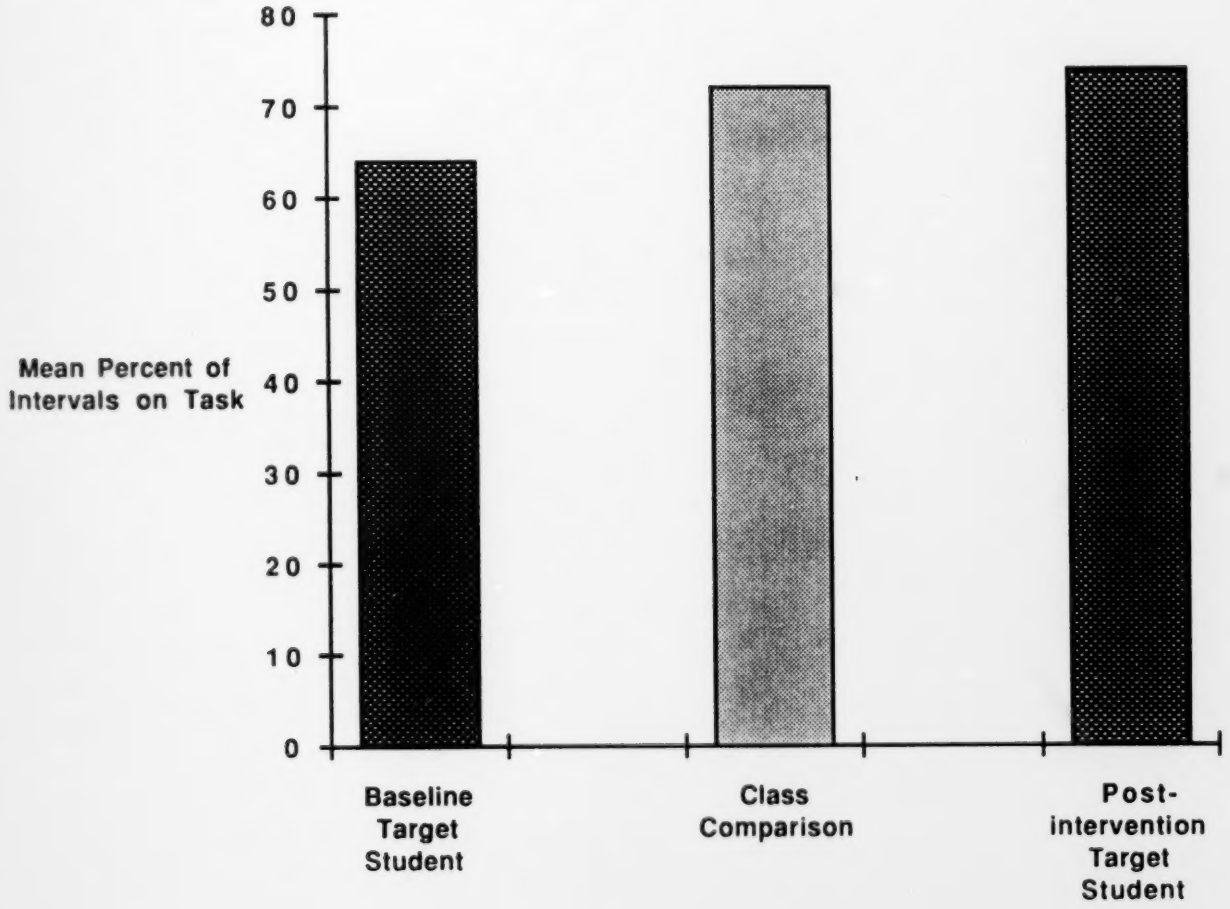
In guiding the development of additional assessment instruments within a CAMPP framework, several common elements appear to be critical to effective implementation. First, the assessment should be based on a functional curriculum, rather than basing the curriculum on particular items from a developmental checklist or test. Template matching with the projected instructional environment is recommended as a central technique in ascertaining the appropriateness of a student's instructional/assessment targets.

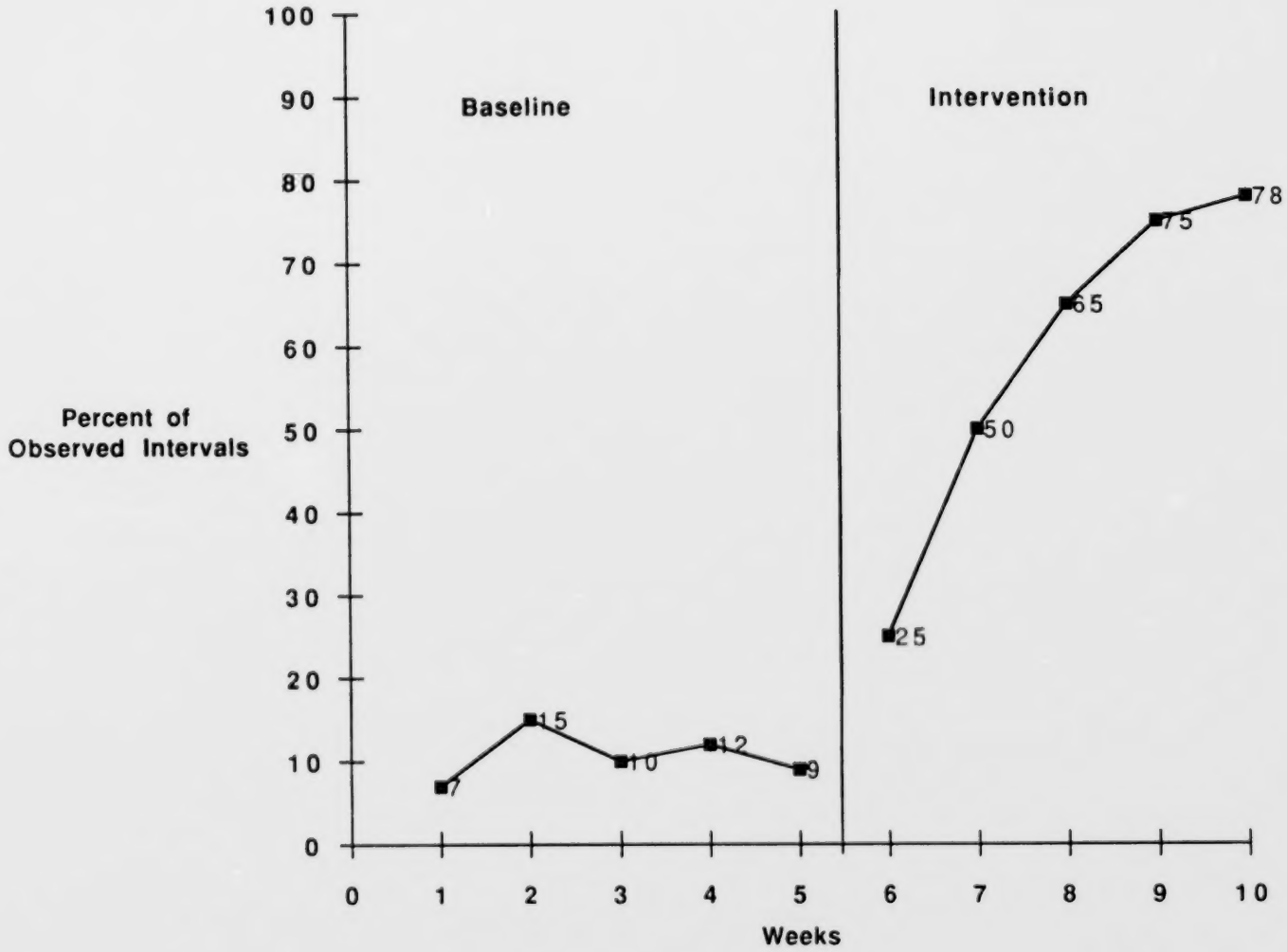
Second, the single-case experimental design methodology (as used in these case studies) should be utilized to appraise the sensitivity of each skill probe. This type of study is necessary if each probe is to provide precise data about student behavioral change on a frequent basis. The

ability of instructors to make program changes when the student fails to display appropriate progress is an essential aspect of this approach.

A final consideration in developing functional skill probes is that users check for reliability of estimate. While naturalistic assessment techniques, such as CAMPP, are not standardized from a psychometric perspective, it remains critical for assessors to use instrumentation that is representative of the student's overall functioning level and consistent across observers. Assessing the student in short sessions over many days and in different situations should increase both the reliability and validity of the developed instrument.

Mean percent intervals on task




Baseline
Intervention
Percent of Observed Intervals
100
90
80
70
60
50
40
30
20
10
0
7
15
10
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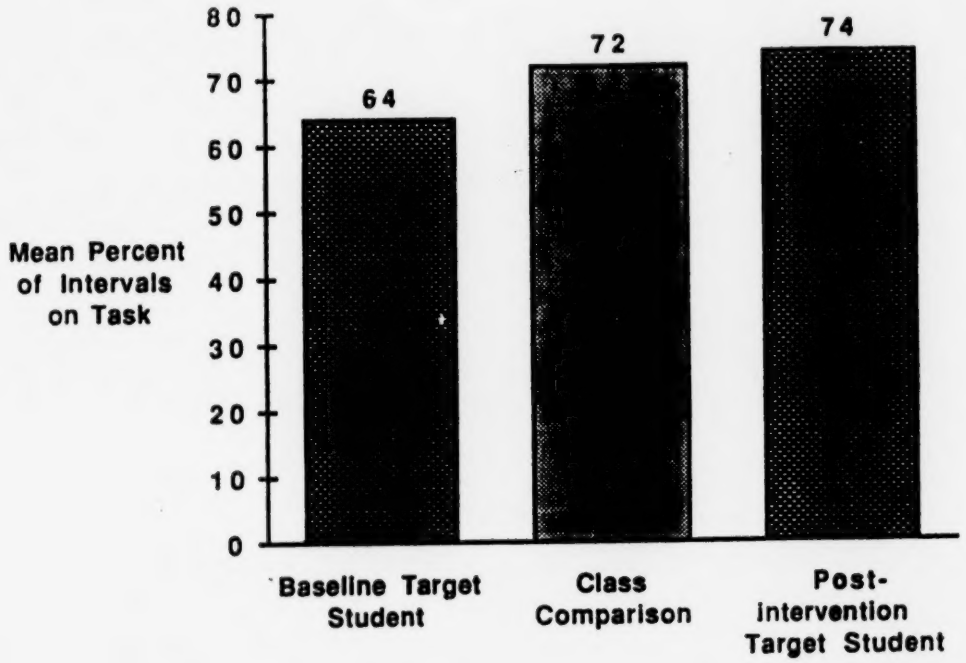
6
7
8
9
10
Weeks


80
70
60
50
40
30
20
10
0
Mean Percent of Intervals on Task
64
72
74
Baseline Target Student
Class Comparison
Post-intervention Target Student